Section 4. MINIMUM ROAD STANDARDS

4.1 The Selectman have adopted this section for the expressed purposed of minimizing any potential burden upon the Town or its residents which may result from the lay out or acceptance of highways or their use by members of the general public.

4.2 This Section shall apply to all roads developed, built, and constructed in the Town Of Alton, to include any existing highway for which Town ownership, maintenance or acceptance is applied for.

4.3 These standards consist of the established minimum acceptance criteria for roads constructed in the Town Of Alton. However, nothing in this section shall be construed to prevent any road developer or builder from employing construction techniques, materials, etc.... which exceed these minimum standards.

4.4 The minimum width of a right of way shall be a consistent fifty feet (50') rights of way shall be established by deed of title or easement.

4.5 Road intersections shall be ninety degrees (90) whenever possible (measured from centerline to centerline). Under no circumstances shall an intersection be constructed at a horizontal curve angle of less than sixty degrees (60). Intersection grades shall not exceed two percent (2%) for a distance of fifty feet (50')when measured from the edge of pavement to the centerline of the traveled way.

4.6 The limits of the right of way shall be delineated using permanent markers at all points of curvature, tangency or angle points located along the boundaries of the right of way. The Road Agent may also require additional markers as he / she may deem necessary. As-built locations to included marker elevations shall be shown on a plan or plat which is stamped by a licensed land surveyor.

4.7 Curve radii along the limits of a right of way and traveled way at street intersections shall be twenty -five feet (25). Curve radii at all other locations shall conform to AASHTO design criteria. Sight distances at horizontal and vertical intersection locations shall also conform to AASHTO standards.

4.8 Road Grades shall not be less than one -half of one percent (0.5%) nor greater than eight percent (**8°I0**)

4.9 The Minimum design speed shall be thirty miles per hour (30) whenever possible, other wise twenty-five miles per hour (25) may be allowed under extenuating circumstances. A New Hampshire Registered Professional Engineer shall certify and specify the minimum design standard which has been met. Plans shall be stamped accordingly.

4.10 The recommended slope of earth or soil embankments shall be 4:1 (horizontal to vertical ratio). However, the maximum slope ratio shall be allowed at 2:1 upon certification by a New Hampshire Registered Professional Engineer of stable ledge being present or adequate reinforcements or detainments which have been designed and constructed in accordance with AASHTO design criteria.

4.11 Road shoulders shall be a minimum width of two feet (2) where no closed drainage and side walk exists and shall be located on both edges of the traveled way. Shoulder slopes shall match the traveled way (2%). Construction shall match roadway sub-surface requirements. Drop-offs beyond the edge of shoulder should be constructed at a 4:1 slope. All drop-offs beyond the shoulder or drainage swales which exceed a 3:1 slope must have guardrails installed. Drawings of road plans shall be submitted which depict cross-sections of typical shoulders and ditch lines.

4.12 Traveled way cross slopes typically be two percent (2 %) or " per foot from the center line to edge of pavement. Super elevations along horizontal curves shall conform to AASHTO standards.

4.13 All traveled way surfaces shall be constructed of bituminous pavement, to consist of a binder course (NH DOT Type B) with a minimum compacted thickness of two inch (2"). and a surface course (NH DOT Type E) with a minimum compacted thickness of one inch (I") The minimum width of the traveled way (pavement) shall be twenty feet (20') If the roadway is expected to carry more than 400 vehicles per day, the Planning Board may require a wider traveled way and /or shoulders

4.14 All Roadway sub-surfaces including the gravel shoulders, shall be constructed to consist of a bank run gravel bottom layer (NHDOT 304.2) with a minimum compacted thickness of twelve inches (12") and crushed gravel (NH DOT 304.3) top layer with a minimum compacted thickness of six inches (6").All materials shall meet NHDOT specifications. If the roadway is expected to carry more than 400 vehicles per day, the Planning Board may increase the thickness of the gravel and / or crushed gravel layers. Any sub-surface running water shall be either diverted outside of the traveled way or contained to prevent undermining of the road base. Drawings of road plans shall be submitted which depict cross-sections of typical road base and surface specifications.

4.15 All wetland crossings shall be approved by the New Hampshire Wetlands Board or any similar State agency with jurisdiction prior to construction

4.16 All bridges shall be designed to withstand a minimum of H-20 loading and shall conform to AS SHTO standards with a minimum travel width of twenty-four feet (24') and guardrails along the entire length of both sides to extend fifty feet (50) beyond the bridge in both directions whenever possible.

4.17 All guard rails shall be constructed of materials in accordance with NHDOT specifications, and at least one railing shall be installed at a height with a maximum rail elevation which is thirty inches (30") above the finish grade.

4.18 All surface water, whether natural flow or a result of surface run-off, which enters upon a right-of-way shall be, divert from the traveled way by open ditches or closed drainage systems which have been designed by a New Hampshire Registered Professional Engineer. Culverts shall consist of pipes made of smooth bore polyethylene, ductile iron or reinforced concrete. All pipe connections shall be sealed in accordance with specifications as set forth by the manufacturer. The minimum diameter shall be fifteen inches (15") The minimum amount of cover shall be three feet (3'). Back fill shall be granular material to be installed in accordance with NH DOT specifications.

Permits shall be required for all natural flow water crossings from the NHDESWetlands Bureau as applicable. Deeded drainage easements shall be required for all water outlets onto private property. Locations and sizes of all drainage devices shall be determined using standard hydraulic design methods based upon calculations for a twenty -five (25) year storm event.

Manhole and catch basin grates shall be designed to conform to surface grades and must be removable for maintenance and safe for travel by bicycles. Additionally, all roads and drainage devices shall be constructed in such a manner as to ensure the maximum ground water level is at least twenty-four inches (24") below the sub grade surface.

Access for a rubber tired backhoe shall be provided to all drainage structures to be maintained including detention ponds and outlets, culverts and swales. Access shall be via a 10-ft wide minimum grass access road, at a grade no steeper than 10% with an easement at least 20-ft wide granting access to the party required to maintain the features

4.19 Erosion shall be controlled at all times (but especially during construction) in accordance with the " Erosion and Sediment Control Design Handbook for Developing Areas in New Hampshire" prepared by the USDA Natural Resources Conservation Service (formerly the Soil Conservation Service). Drainage slopes which exceed a five percent (5%) grade shall require permanent erosion control mechanisms which have been designed by a New Hampshire Registered Professional Engineer.

4.20 The Town shall require all designs and roadway plans to be stamped by a New Hampshire Registered Professional Engineer. The Road Agent or his/her designee shall then verify the plans meet these minimum standards. Upon completion of construction, as-built plans shall also be required with a PE Stamp. The Road Agent or his/her designee shall then verify the as-built plans conform with existing site conditions.

4.21 All road plans shall also be submitted to the Police Chief and Fire Chief for an evaluation of safety factors. Each Chief shall identify hazards and indicate locations for signs, marking or other safety devices as they deem necessary. Upon completion of construction, each Chief shall verify in writing that all safety concerns have been addressed in an acceptable manner.

4.22 A minimum of five feet (5') wide sidewalk shall be required within a right-ofway, but located outside of the limits of the traveled way and drainage areas on each side of the road whenever a project is a proposed housing development if the planned density average is in excess of one dwelling per hundred feet of road frontage and there are a total of more than twenty-five (25) dwellings which abut the proposed roadway. Sidewalk construction shall require a minimum subsurface base of twelve inches of crushed gravel (NHDOT 304.3) Surface materials shall be either two inches (2") compacted bituminous pavement (NHDOT Type F) or six inch (6") thick reinforced concrete. All materials shall conform to NHDOT specifications. Sidewalk designs shall conform to standards set forth under the Americans with Disabilities Act and shall include provisions for snow removal operations which are satisfactory to the Road Agent.

4.23 All utility devices shall be installed within the right of way but, at least six feet (6') beyond the edge of the traveled way and drainage areas. All poles, conduits and pipes shall require deeded easements to describe their exact locations.

4.24 Dead end roads shall not be permitting to exceed two thousand five hundred feet (2,500') in length to a single point of access. This distance shall be measured from the end of the terminus to the nearest intersection with a dual egress street. All dead end roads shall be constructed with a minimum pavement width of twenty (20') in their entirety. Terminus shall be either a cul-de-sac with a minimum travel way radius of forty feet (40), or a hammerhead with a minimum travel way radius of sixty -two feet (62').

4.25 All testing shall be completed by a qualified third party, paid for by the applicant. Testing for gradation for all materials used in roadway, sidewalk and drainage construction shall be tested at a frequency of every 500-cubic yards. Data from a minimum of two (2) samples shall be submitted prior to delivery. Materials not meeting the gradation requirements shall not be placed on the road All test results shall be submitted to the Alton Road Agent or his/her appointed designee.

Testing for density for all materials used in roadway, sidewalk and drainage construction shall be tested at a frequency of every 500-cubic yards per ASTM D1557 Modified Proctor Method. In-place density shall be tested in accordance with ASTM D2922, ASTM D1556 or by other methods as approved by the Alton Road Agent or his /her appointed designee. In-place density testing shall be completed at a frequency of 3 test per 500-linear feet per lift. The minimum compaction rate shall be ninety three percent (93%) of the maximum density of the material as determined by ASTM D1557 Modified Proctor. Materials not meeting the compaction requirements shall be re-compacted to meet the requirements stated herein prior to the release of securities.

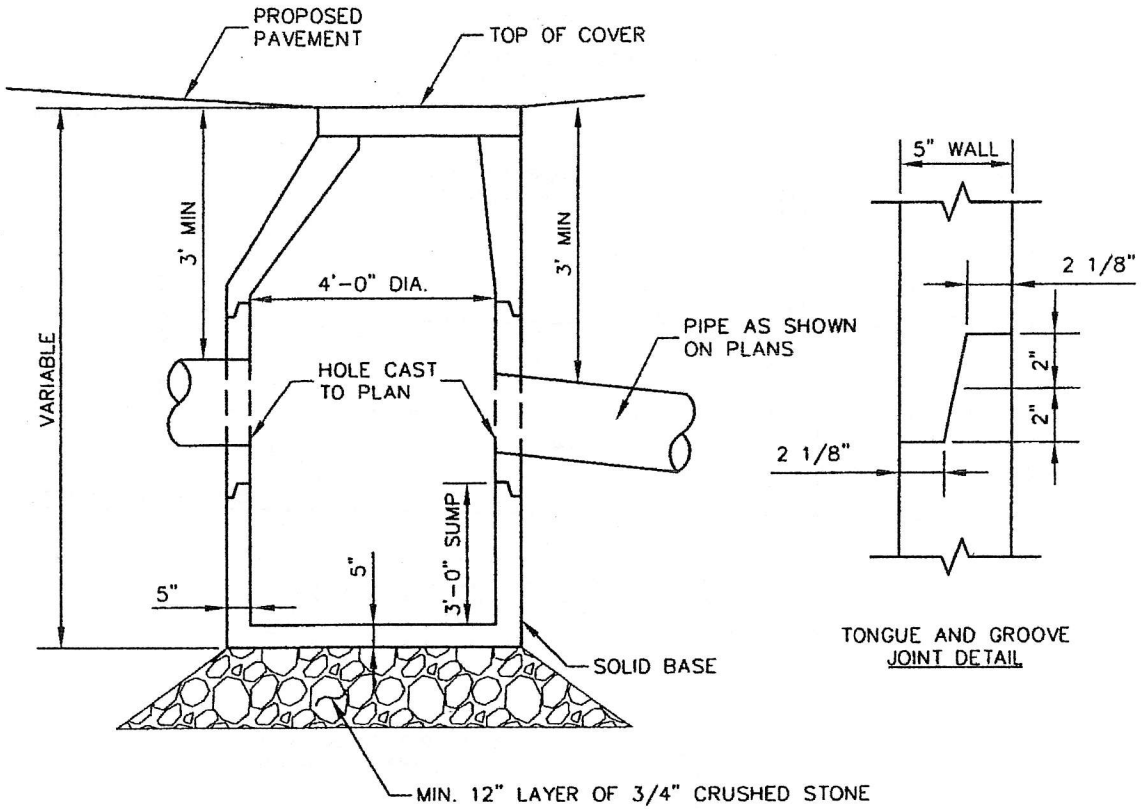
4.26 Driveways shall be constructed to ensure the structural integrity of the edge of pavement is maintained to provide for drainage which will prevent water run off from entering upon the travel way. Every dwelling and lot must be provided with a means of access which is located solely on that property. All connections to existing Town Highways shall conform with the provisions of Section 7

4.27 The Selectman shall approve all street names giving due consideration to the request of the builder, developer or residents. The Selectman shall not approve any name which already exists or which in their opinion may be so similar to an existing name as to cause confusion during an emergency response situation.

4.28 The Code Official for the Town of Alton shall provide all dwellings with an address prior to a Certificate of Occupancy Permit being issued. Address numbers are to be displayed in a visible location and in accordance with written Town Address Regulations.

4.29 Nothing in these Policies and Regulations shall be constructed to limit the ability of the Planning Board to allow construction of a road which does not meet the minimum road standards for small-scale subdivisions, accordance with Planning Board regulations. However, it must be expressly understood that such roads shall not be eligible to become Town owned or Town maintained until such time as the road does meet the minimum road standards which are in effect at the time a highway layout or street acceptance is applied for. The Selectman strongly recommend that the Planning Board have this condition noted and stamped on approved plans whenever such allowance is granted.

4.30 Construction of roads sidewalks, and drainage features shall conform to the details provided in the Appendices of these Policies and Regulations. These details shall be included in the plan sets as applicable.



NOTES:

1) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH SHALL, IN GENERAL, DEPEND ON WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET.

2) PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL WILL DEPEND ON WATER TIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT.

3) FOR BITUMASTIC TYPE JOINTS, THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS INCLUDE RAM-NEK, KENT SEAL NO. 2, EZ OR EQUAL.

4) ALL STRUCTURES SHALL MEET H-20 LOADING.

5) THE TONGUE OR THE GROOVE OF THE JOINT OF THE WALL. SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ.IN. PER LINEAR FOOT.

6) ECCENTRIC CONES SHALL BE USED WHEN DEPTH TO CROWN OF SHALLOWEST PIPE EXCEEDS 30". RISERS OF 12", 3' AND 4' CAN BE USED TO REACH THE DESIRED DEPTH.

7) CATCH BASIN GRATES TO BE NHDOT TYPE B CAST IRON

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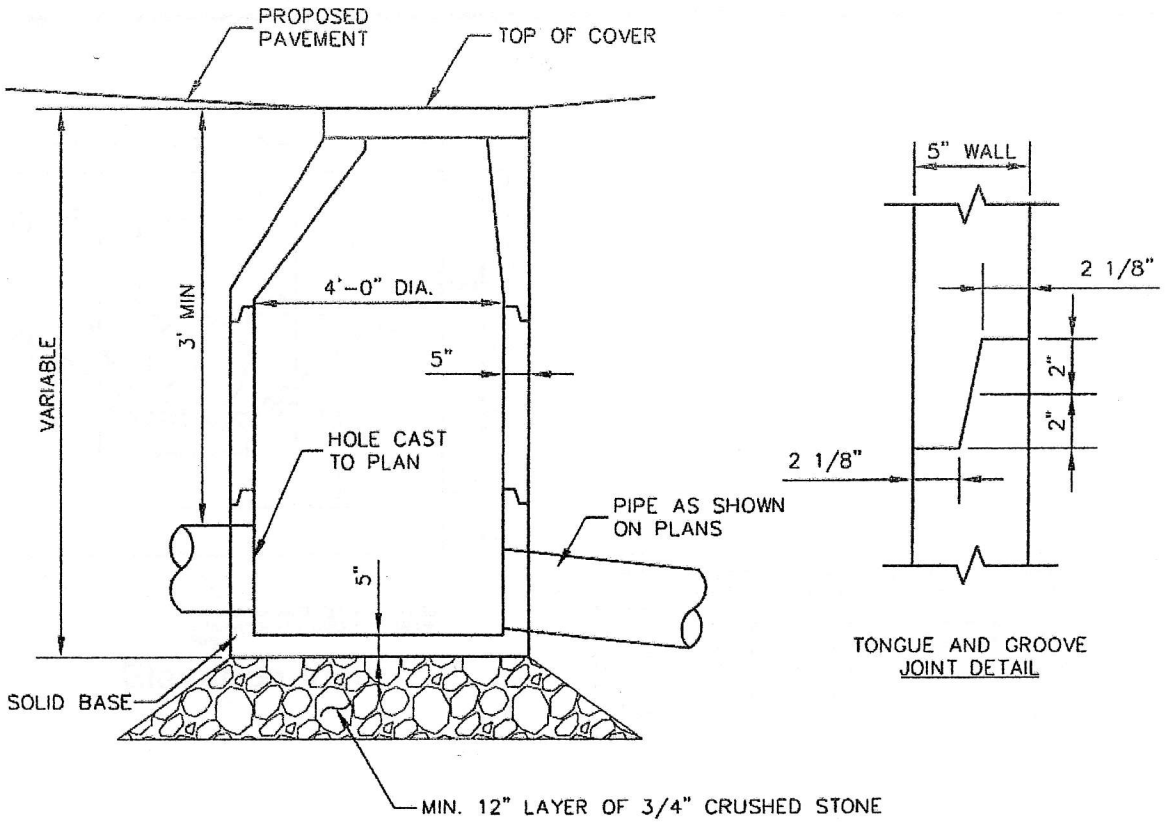
Figure 1:
Catch Basin
Town of Alton, NH
Standard Details

Not to Scale

FEBRUARY 5th 2007



NOTES:

t) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH SHALL, IN GENERAL, DEPEND ON WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET.

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5) THE TONGUE OR THE GROOVE OF THE JOINT OF THE WALL. SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SO.IN, PER LINEAR FOOT.

6) ECCENTRIC CONES SHALL BE USED WHEN DEPTH TO CROWN OF SHALLOWEST PIPE EXCEEDS 30". RISERS OF 12", 3' AND 4' CAN BE USED TO REACH THE DESIRED DEPTH.

7) DRAIN MANHOLE COVERS SHALL BE CONSTRUCTED OF CAST IRON & LABELED "DRAIN"

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Figure 2: Stormwater Manhole
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale

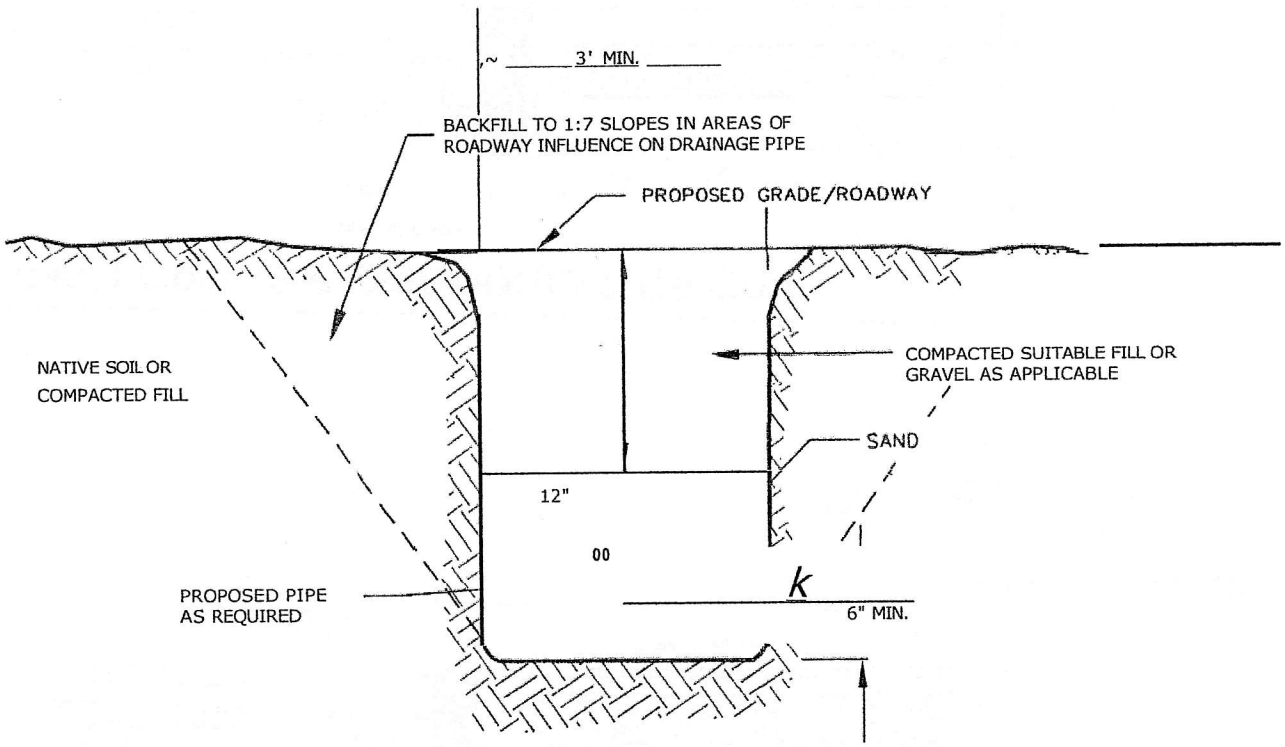

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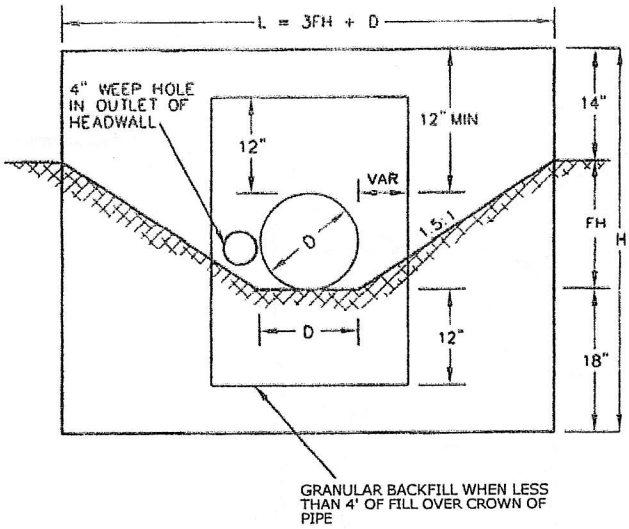
Figure 3:
Drainage Pipe Bedding
Town of Alton, NH
Standard Details

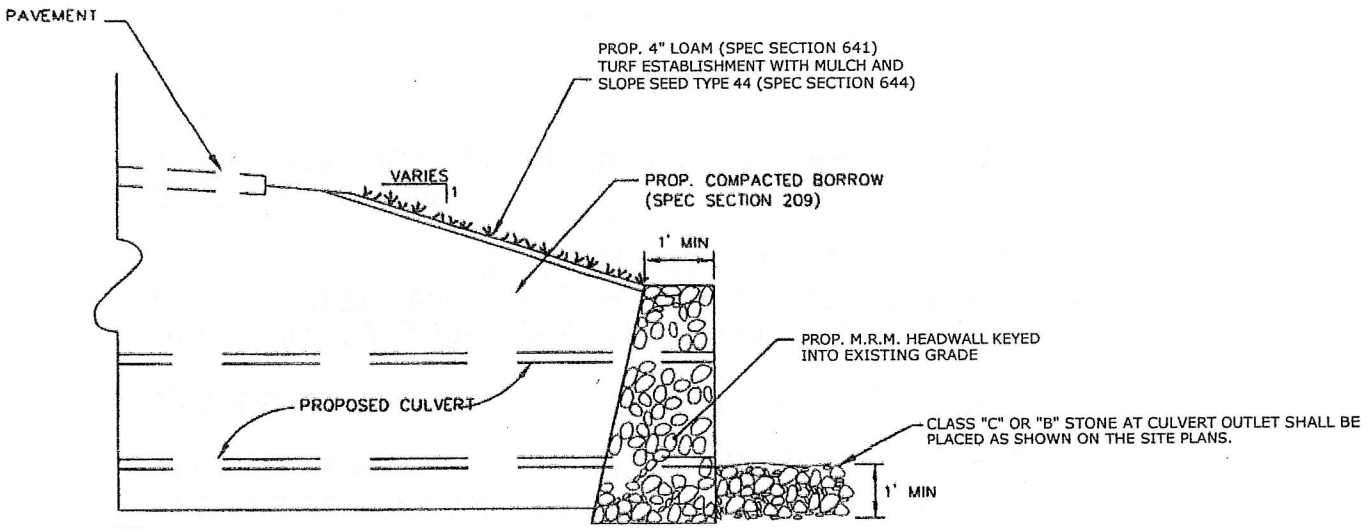
Not to Scale

FEBRUARY 5th 2007



Elevation View

DIAMETER O INCHES	HEADWALL LENGTH L	HEADWALL HEIGHT H	FILL HEIGHT FH	WIDTH AT BOTTOM W
15	4'-6"	3'-9"	t'-t"	2'-0"
18	5'-6"	4'-0"	1'-4"	2'-0"
24	7'-6"	4'-6"	t'-70"	2'-2"
30	9'-6"	5'-0"	2'-a"	2'-3"
36			2- 10" ~	2'-S"



NOTE:
ALL CONSTRUCTION MATERIALS AND PROCEDURES SHALL CONFORM TO THE STATE OF N.H. DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. -LATEST EDITION AND ADOENOUMS UNLESS OTHERWISE SPECIFIED.

Section View

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Figure 4:
Headwall
Town of Alton, NH
Standard Details

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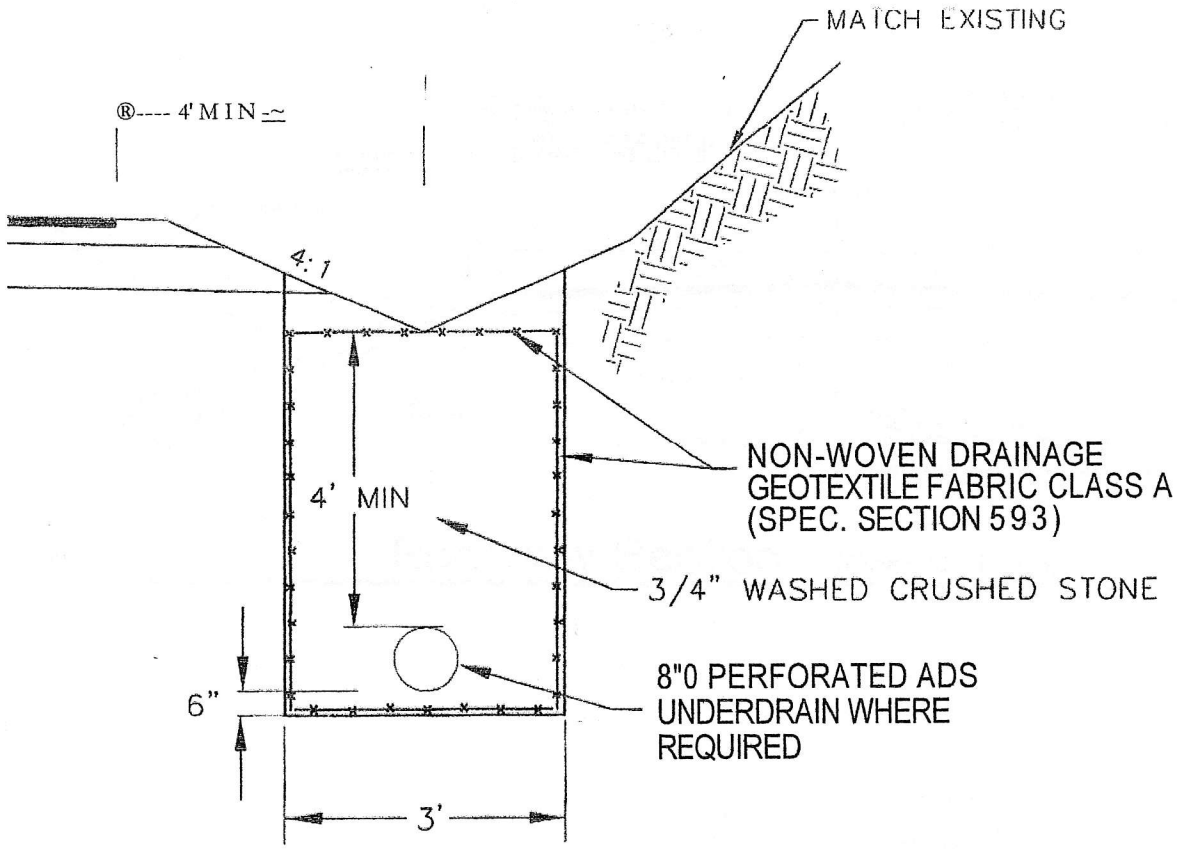
Not to Scale



NOTE:

1) GRADING FOR UNDERDRAIN PIPE SHALL BE PARALLEL TO GRADE OF THE ROAD.

2) UNDERDRAIN OUTLET SHALL ENTER A CATCH BASIN OR BE PROTECTED BY A MASONRY RUBBLE HEADWALL. WHEN ENTERING A HEADWALL, LAST 10-LF SHALL BE SOLID UNDERDRAIN.

3) UNDERDRAIN CROSSING THE ROAD SHALL BE SOLID.

4) UNDERDRAIN FLUSHING BASINS SHALL BE INSTALLED AT THE END OF RUNS AND APPROXIMATELY EVERY 300'.

5) TOP OF UNDERDRAIN PIPE SHALL BE BURIED A MINIMUM OF 4[1].

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Figure 5:
Underdrain
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale

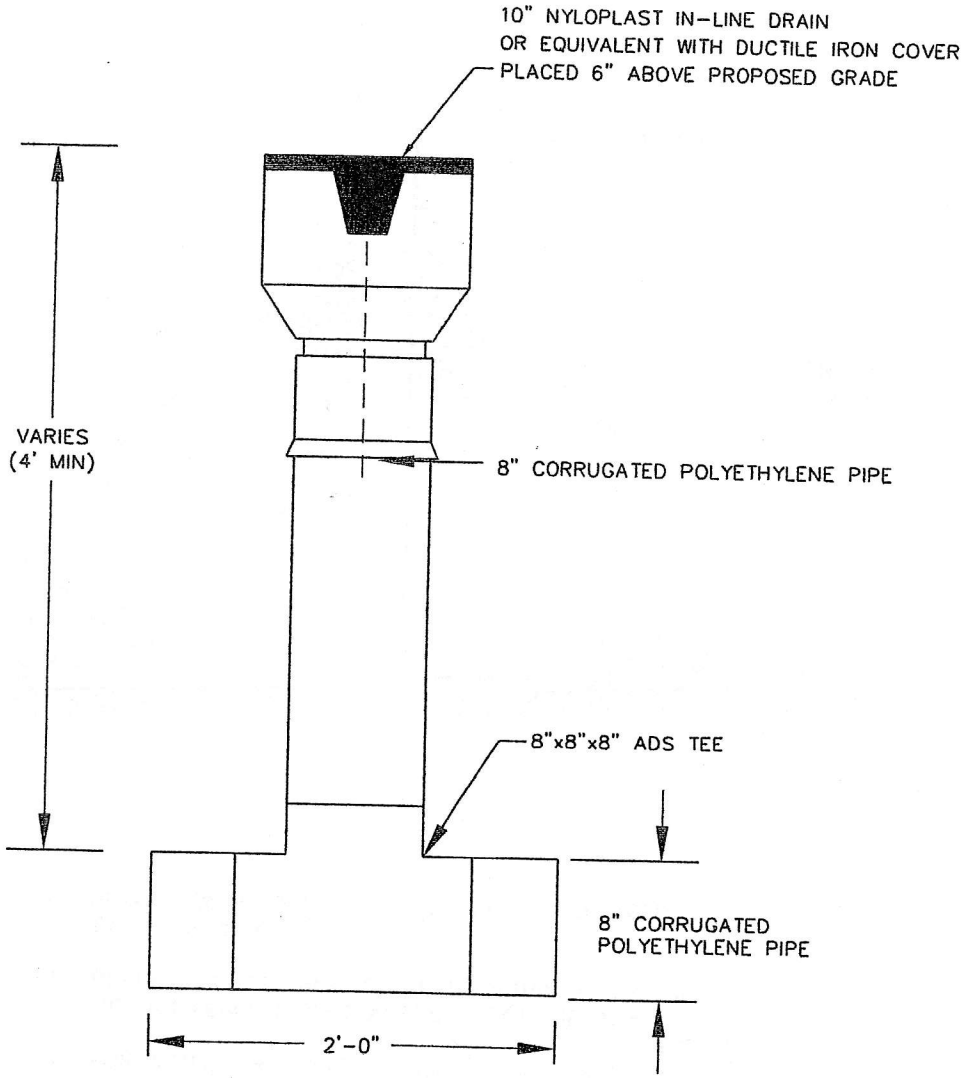

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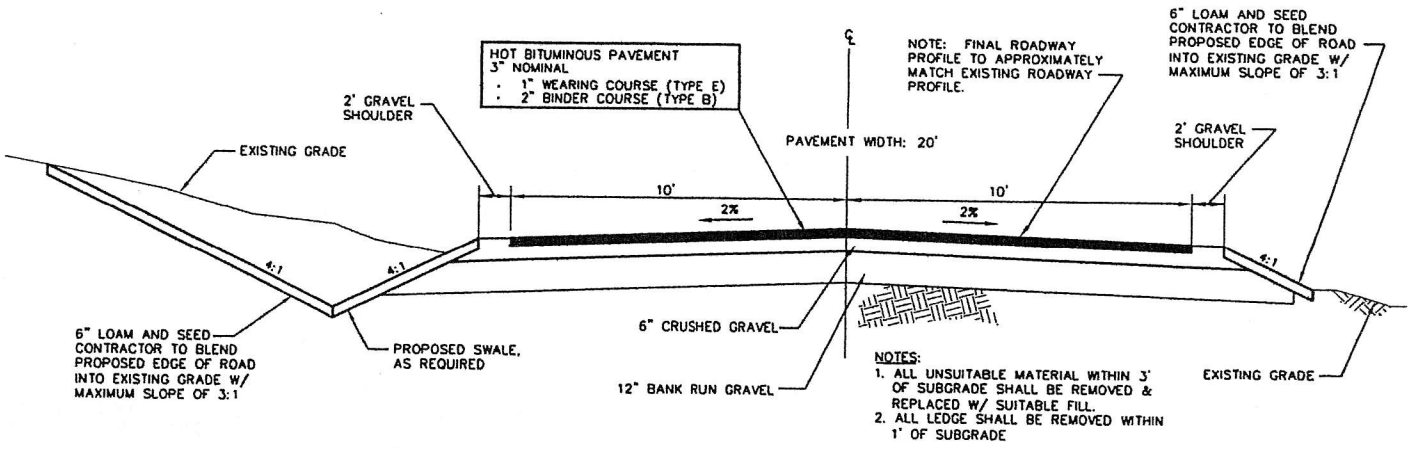
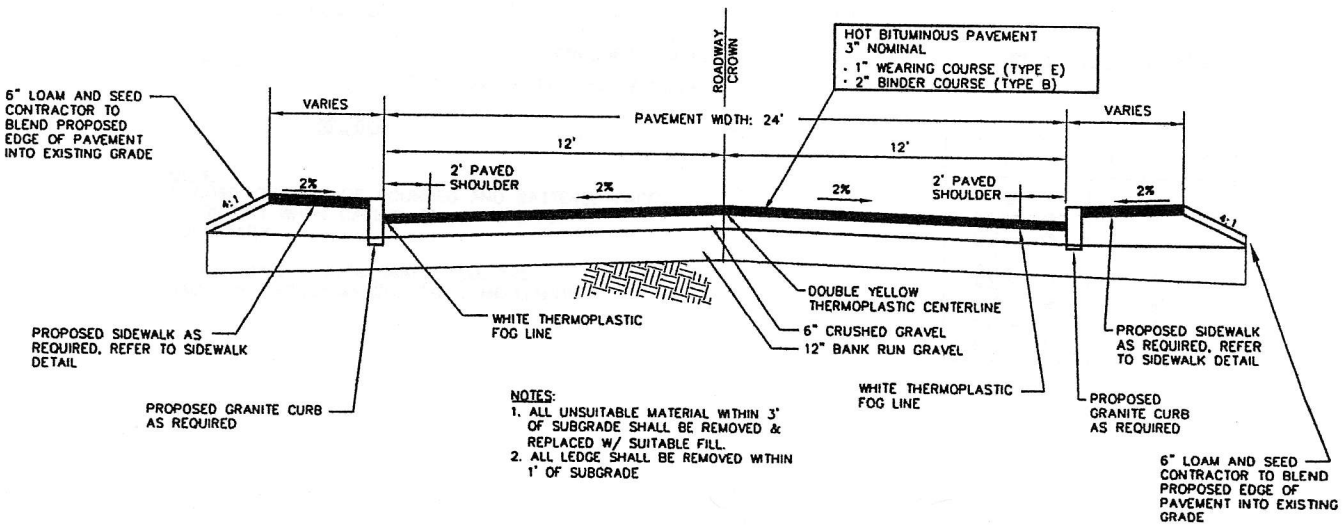
Figure 6:
Underdrain Flushing Basin
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



Roadway Section (Open Drainage)



Roadway Section (Sidewalk and Closed Drainage)

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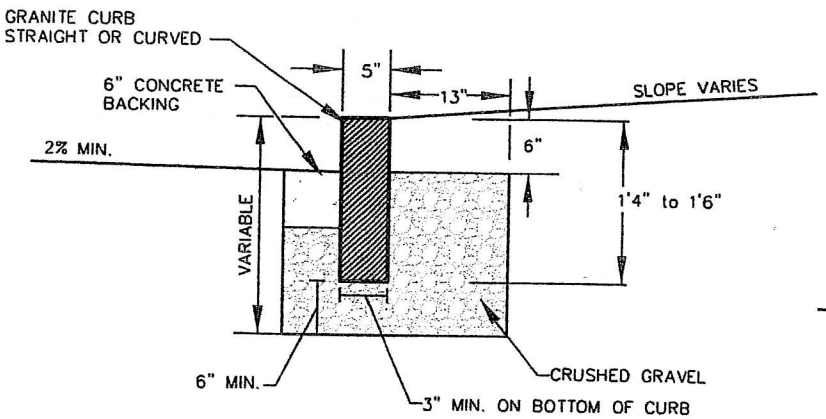
Figure 7:
Standard Roadway Cross Section
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale

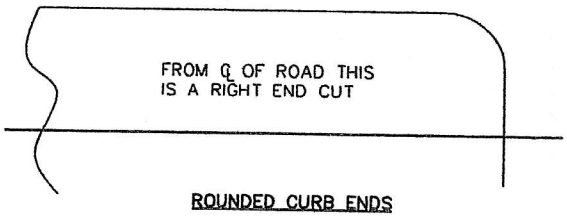


SECTION

NOTE:
1. CURB ENDS TO BE ROUNDED AND BATTERED FACES TO BE CUT WHEN CALLED FOR ON THE PLANS, SUBSIDIARY.

2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.

MINIMUM LENGTH OF CURB STONES – 3'
MAXIMUM LENGTH OF CURB STONES – 10'
MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART



ROUNDED CURB ENDS

RADIUS	MAX. LENGTH
21'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
OVER 60'	10'

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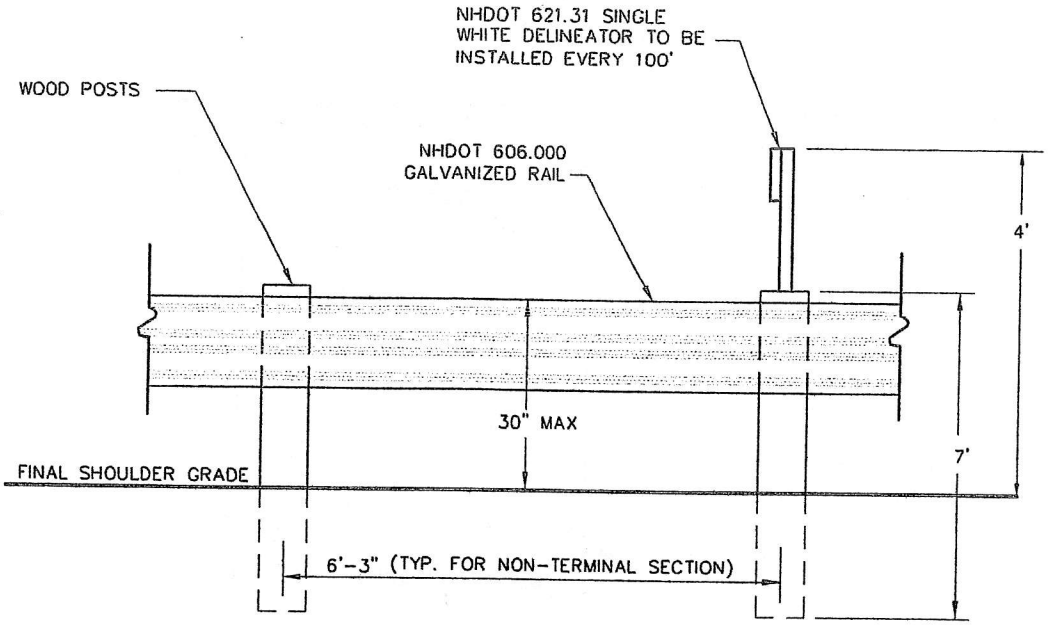
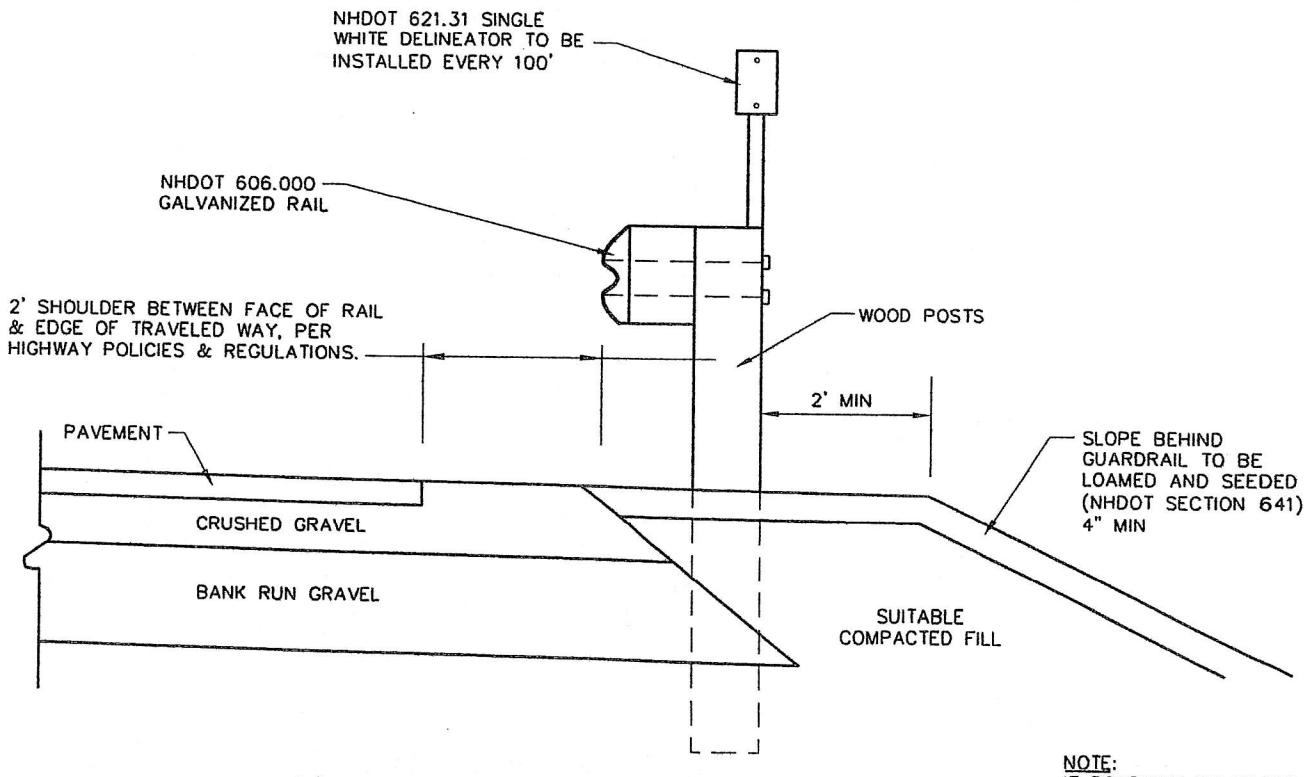
Figure 8:
Curb
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007 *Not to Scale*





NOTE:
IF ROADWAY CONTAINS
CURB, GUARDRAIL FACE
TO MATCH CURB FACE

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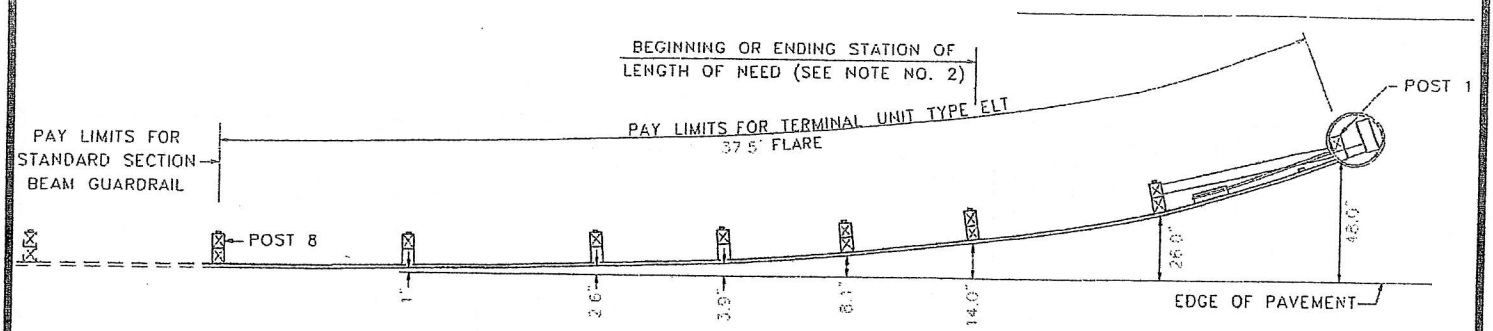
Figure 9: Guardrail

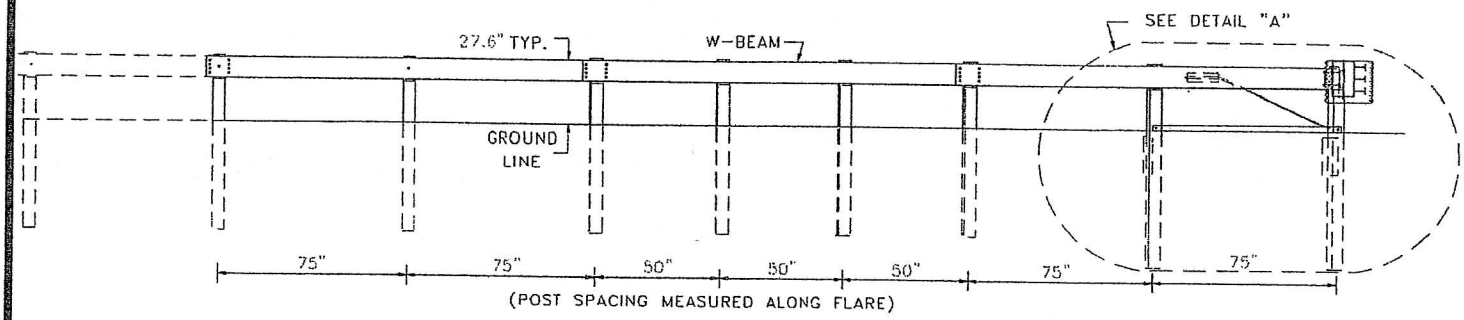
Town of Alton, NH Standard Details

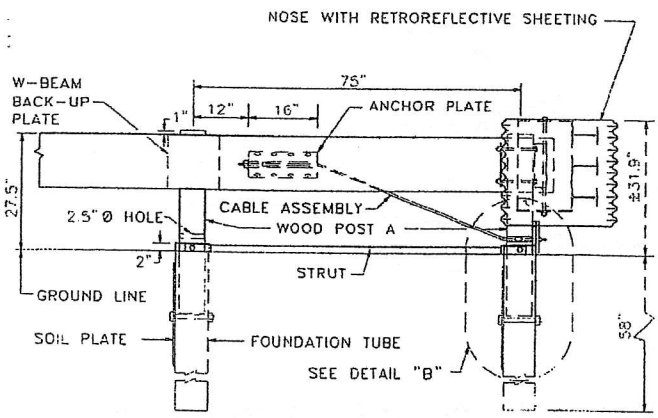
FEBRUARY 5th 2007

Not to Scale



PLAN





DETAIL "A"

GENERAL NOTES

1. THE CORRECT ASSEMBLY AND INSTALLATION OF THIS TERMINAL UNIT, INCLUDING THE LAYOUT OF THE 37.5' FLARE, IS IMPORTANT TO ITS PROPER PERFORMANCE
2. THE LENGTH OF NEED IS THE TOTAL LENGTH OF A LONGITUDINAL BARRIER NEEDED TO SHIELD AN AREA OF CONCERN. TO DETERMINE THE LENGTH OF NEED, REFER TO THE *ROADSIDE DESIGN GUIDE* – AASHTO, 1996.
3. THE AREA OUTSIDE AND DOWNSTREAM OF THE FIRST 12.5' (BREAKAWAY NOSE SECTION) OF THE ELT SHOULD BE REASONABLY TRAVERSABLE AND FREE OF FIXED-OBJECT HAZARDS TO THE EXTENT PRACTICAL. IF A CLEAR RUNOUT IS NOT ATTAINABLE, THIS AREA SHOULD AT LEAST BE SIMILAR IN CHARACTER TO UPSTREAM, UNSHIELDED ROADSIDE AREAS.
4. SEE NHDOT STANDARDS NO. GR-3B & GR-3C FOR ELT HARDWARE DETAILS. SEE STANDARD NO. GR-1 FOR ADDITIONAL DETAILS OF COMMON HARDWARE.
5. THIS TERMINAL SHALL BE INSTALLED USING THREE 150" LONG STRAIGHT SECTIONS OF W-BEAM RAIL THAT ARE FORCED AGAINST THE POSTS. SHOP-CURVED SECTIONS SHALL NOT BE USED. (THE SECOND SENTENCE OF 606.2.4.2 DOES NOT APPLY.)

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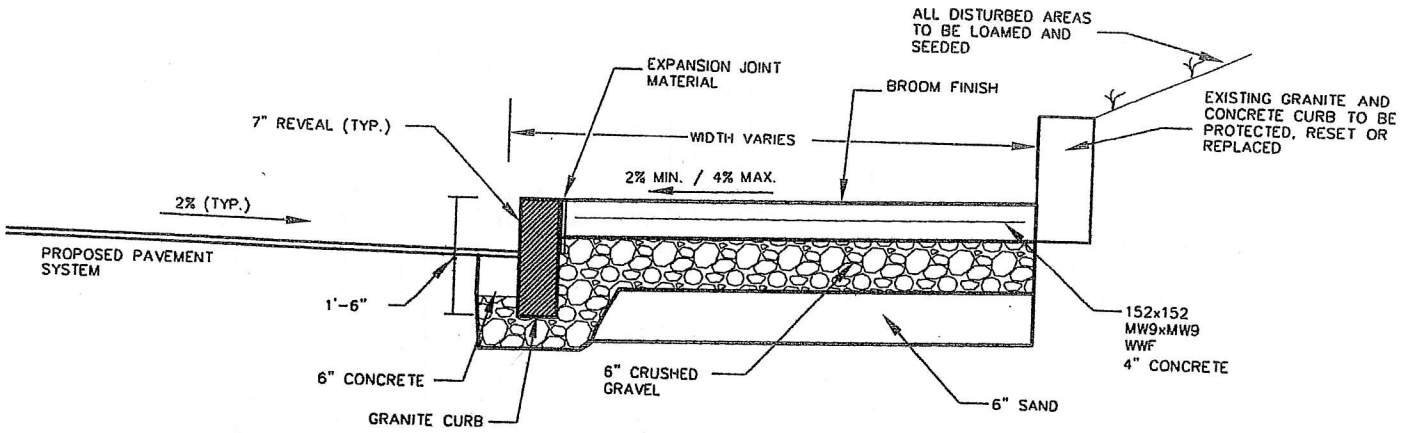
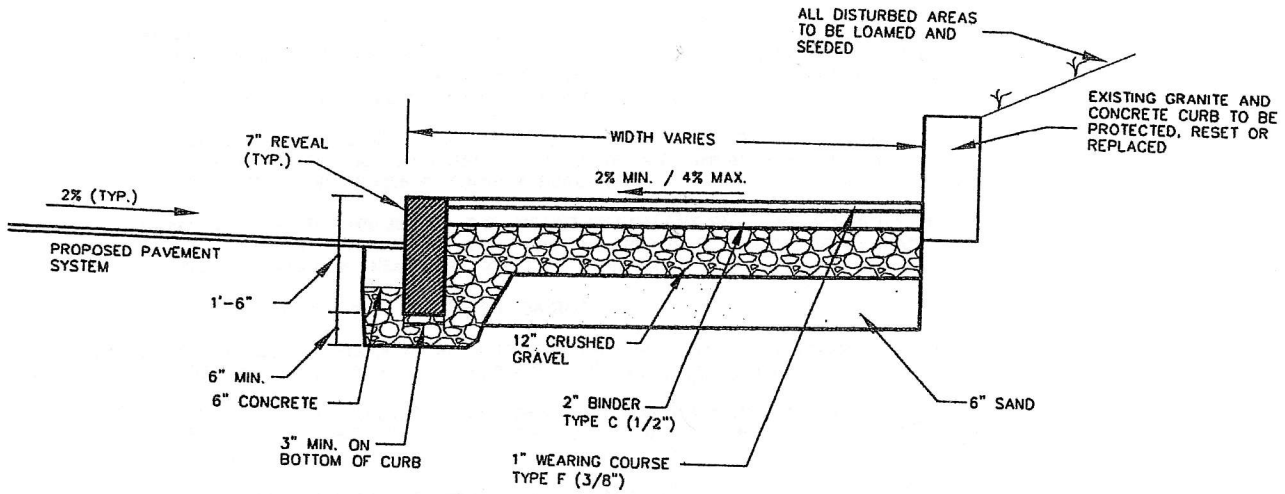
Figure 10:
Guardrail End Section
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



Typical Concrete Sidewalk/Granite Curb



Typical Bituminous Sidewalk/Granite Curb

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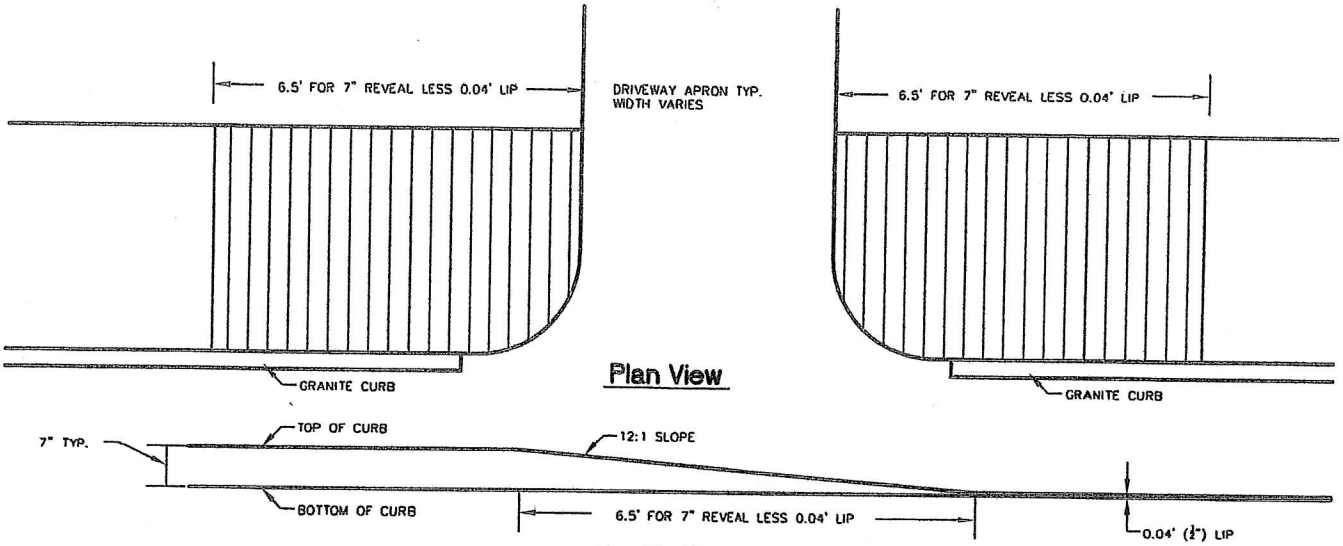
Figure 11:
Sidewalk
Town of Alton, NH
Standard Details

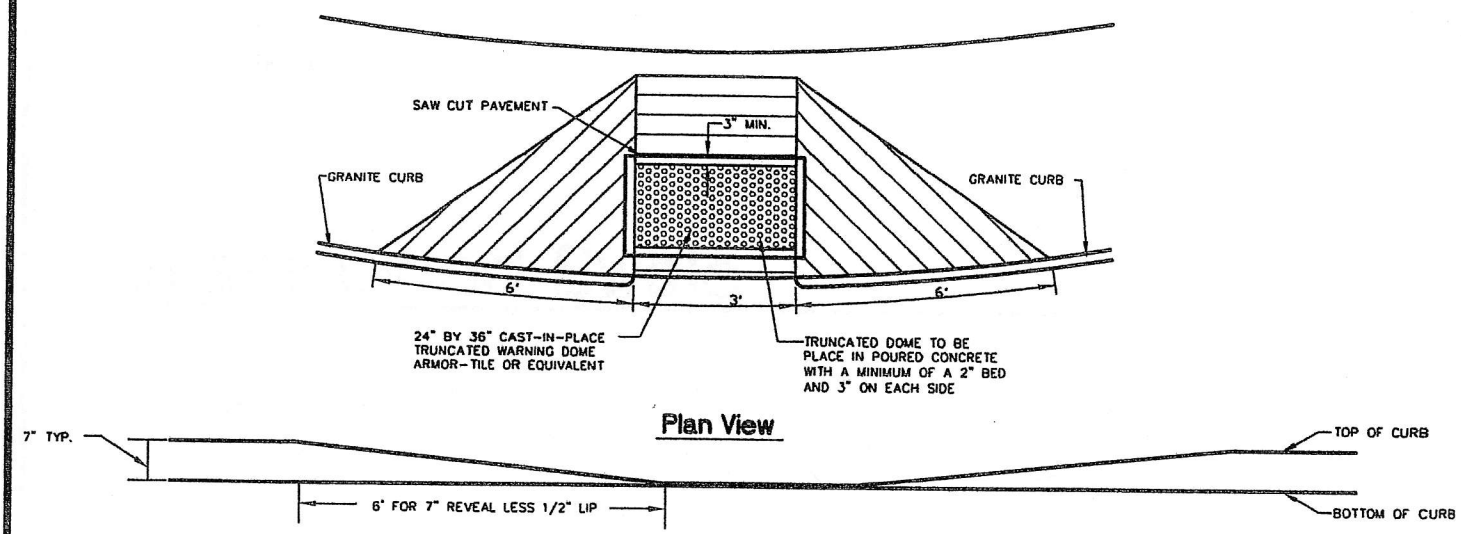
FEBRUARY 5th 2007

Not to Scale



Sidewalk/Curb Transition Ramp

NOTE:
SIDEWALK TRANSITION RAMPS SHALL BE CONSTRUCTED AT THE INTERSECTIONS OF ALL DRIVEWAY APRONS AS WELL AS AT THE ENDS OF PROPOSED SIDEWALKS.



NOTE:
HANDICAP ACCESS RAMPS SHALL BE CONSTRUCTED AT ALL SIDEWALK RADII AROUND ROADWAY INTERSECTION CORNERS, AND AT ALL CROSSWALKS.

Typical Handicap Access at Sidewalk Radius

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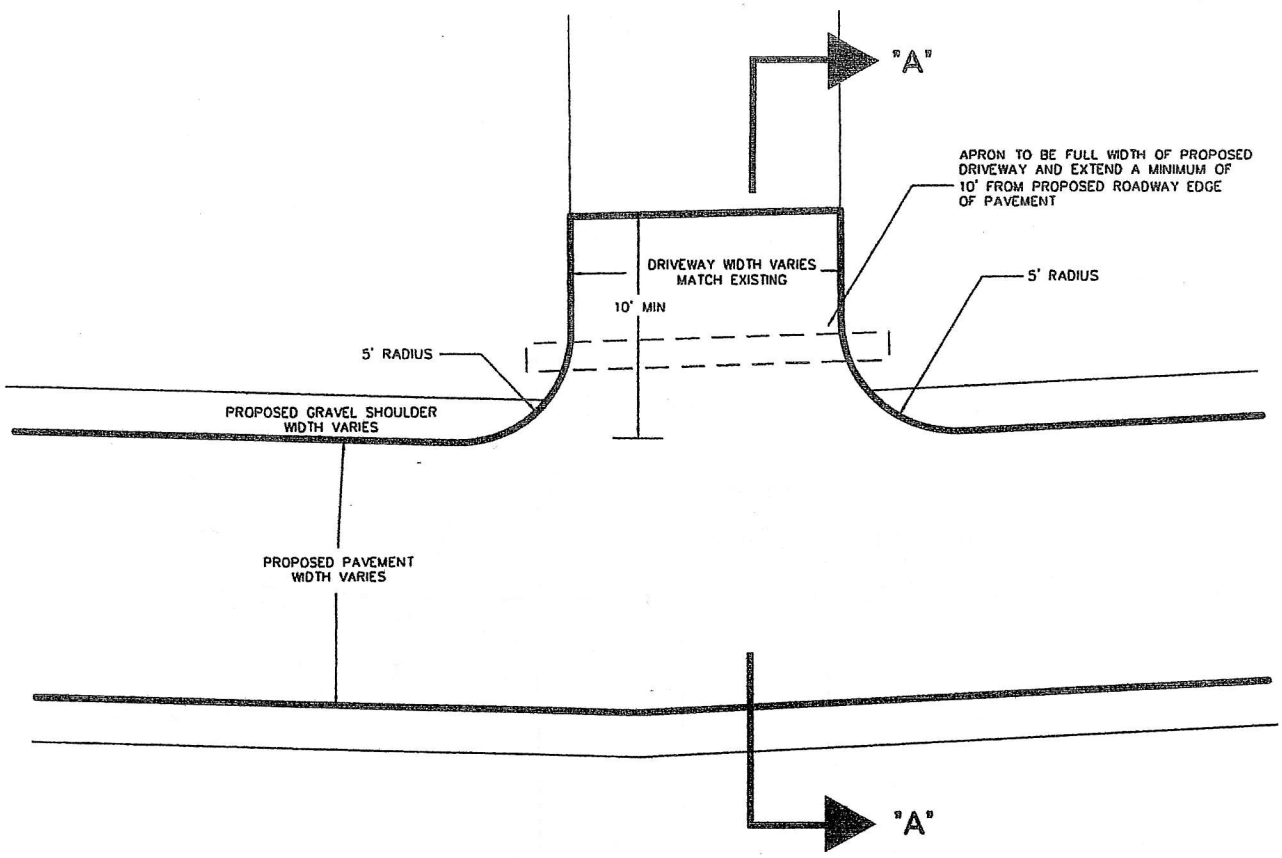
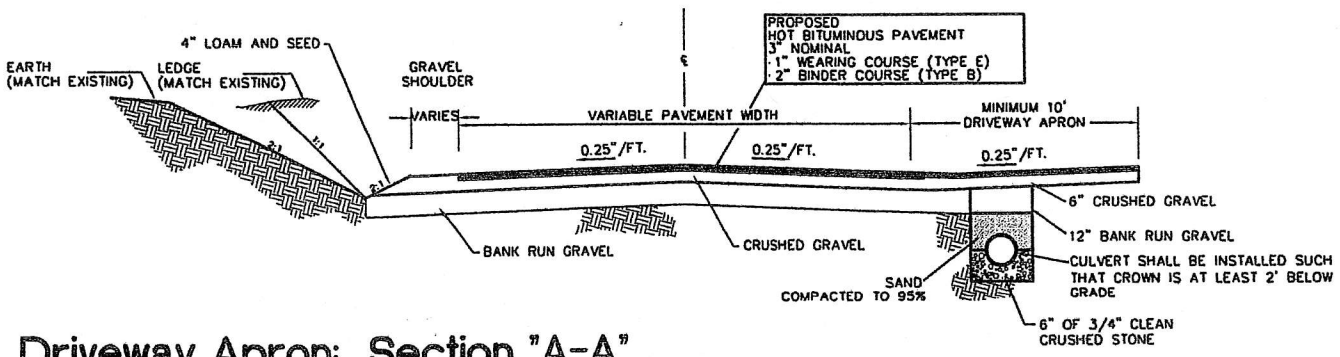
Figure 12:
Sidewalk Handicap Access
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



Typical Driveway Apron



Driveway Apron: Section "A-A"

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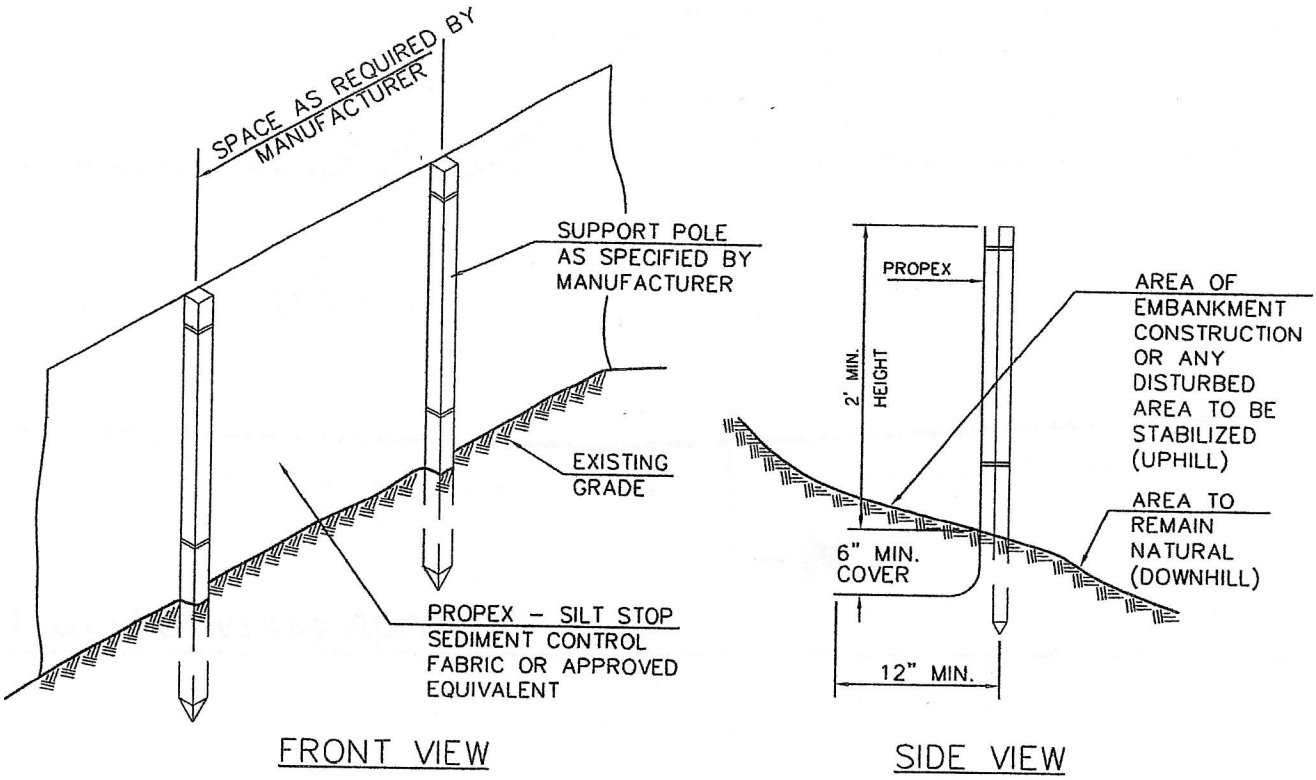
Figure 13:
Driveway Apron
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



NOTE:
AT A MINIMUM, SILT FENCE IS TO BE INSTALLED TO PROTECT WETLAND AREAS, WATERWAYS, EXISTING AND PROPOSED DRAINAGE FEATURES, SLOPES, LAWNS AND PLANTINGS ADJACENT TO THE WORK.

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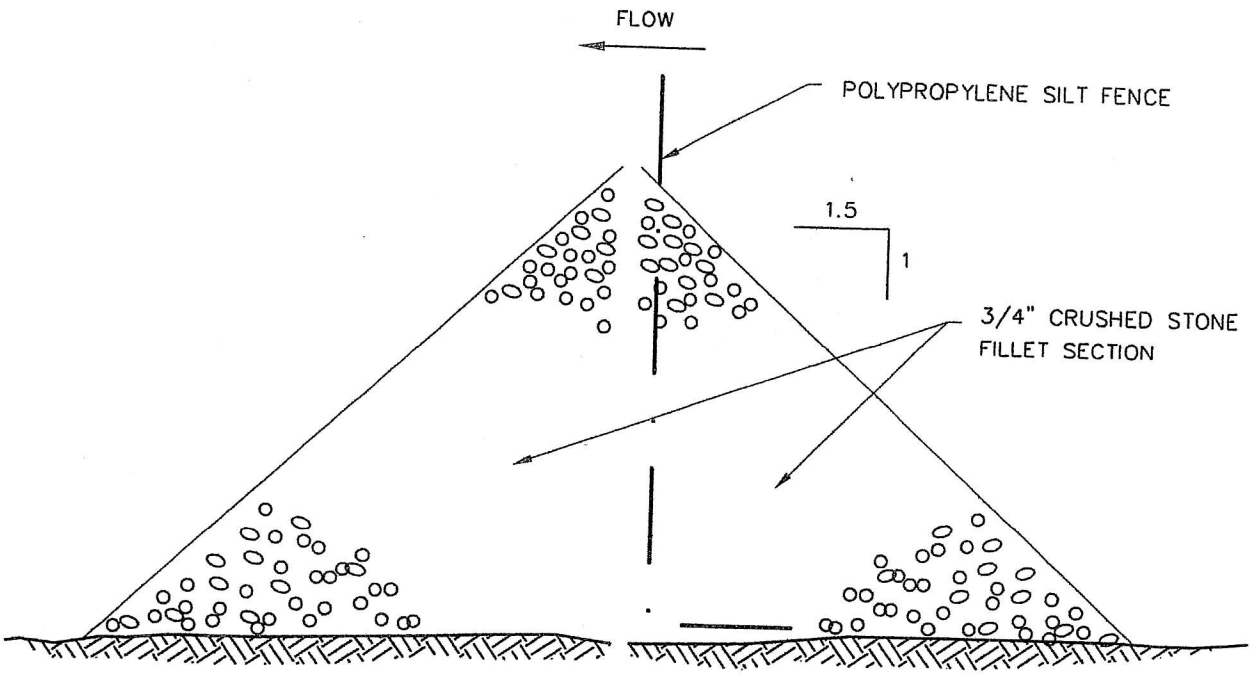
Figure 14:
Silt Fence
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



1. PLACE CONTINUOUS LENGTH OF SILT FENCE ACROSS DRAINAGE WAY.
2. PLACE 3/4" CRUSHED STONE TO WITHIN 6" OF TOP OF SILT FENCE FABRIC ACROSS DRAINAGE WAY.
3. FOR ACTIVE DRAINAGE OUTFLOW CHECK DAMS SHALL BE PLACED IN SERIES ALONG FLOW LINE TO RETAIN SEDIMENTS.

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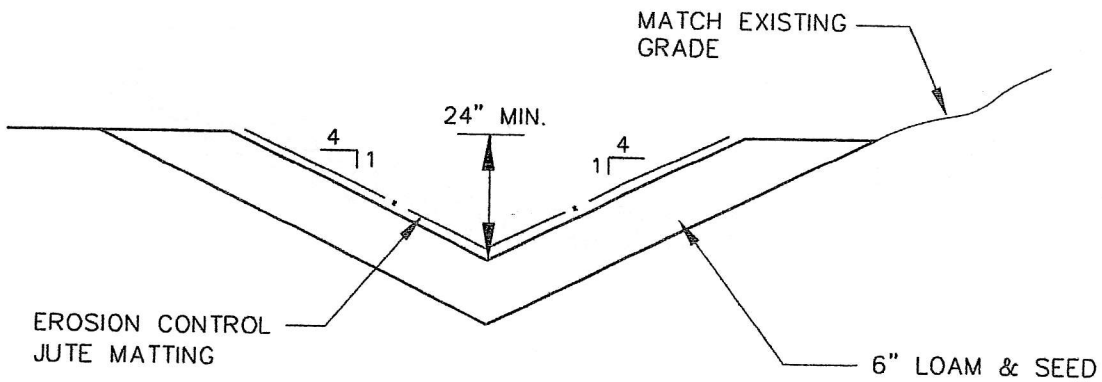
Figure 15:
Stone Check Dam
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



Grass Lined Swale

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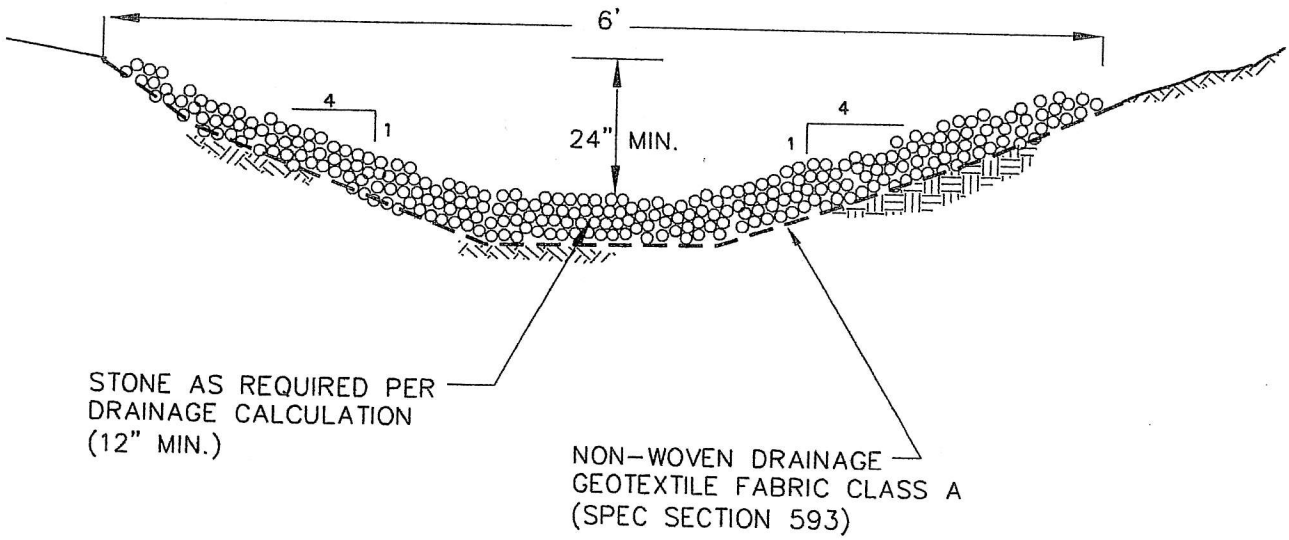
Figure 16:
Grass Lined Swale
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

Not to Scale



Stone Lined Swale

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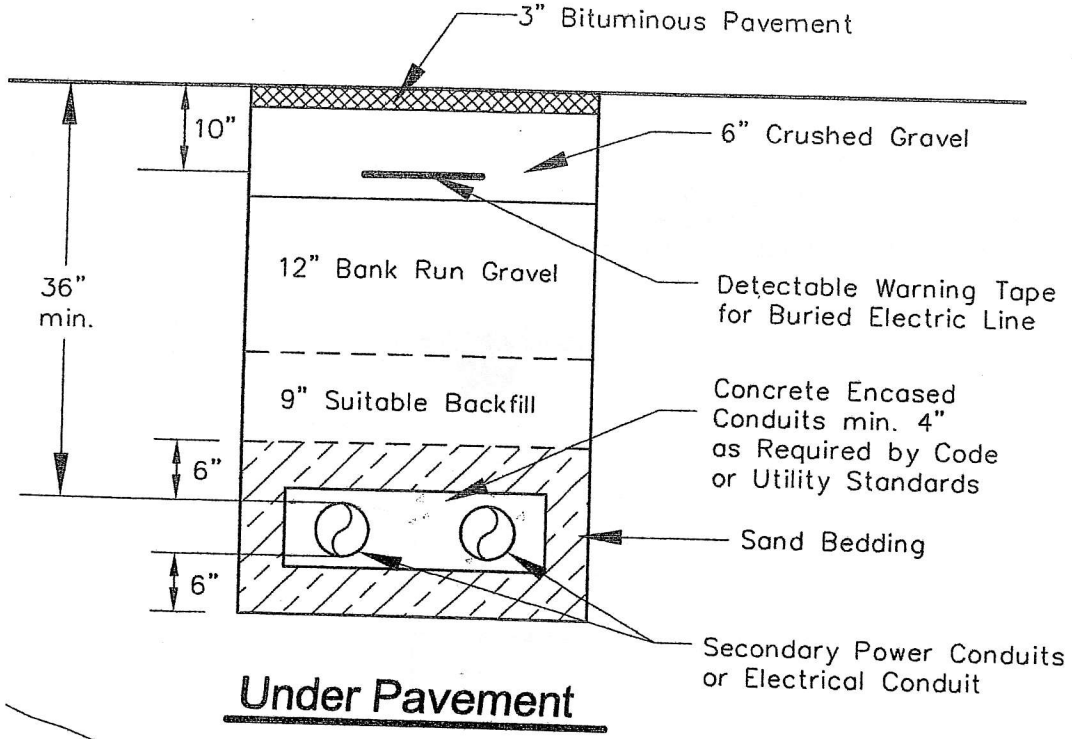
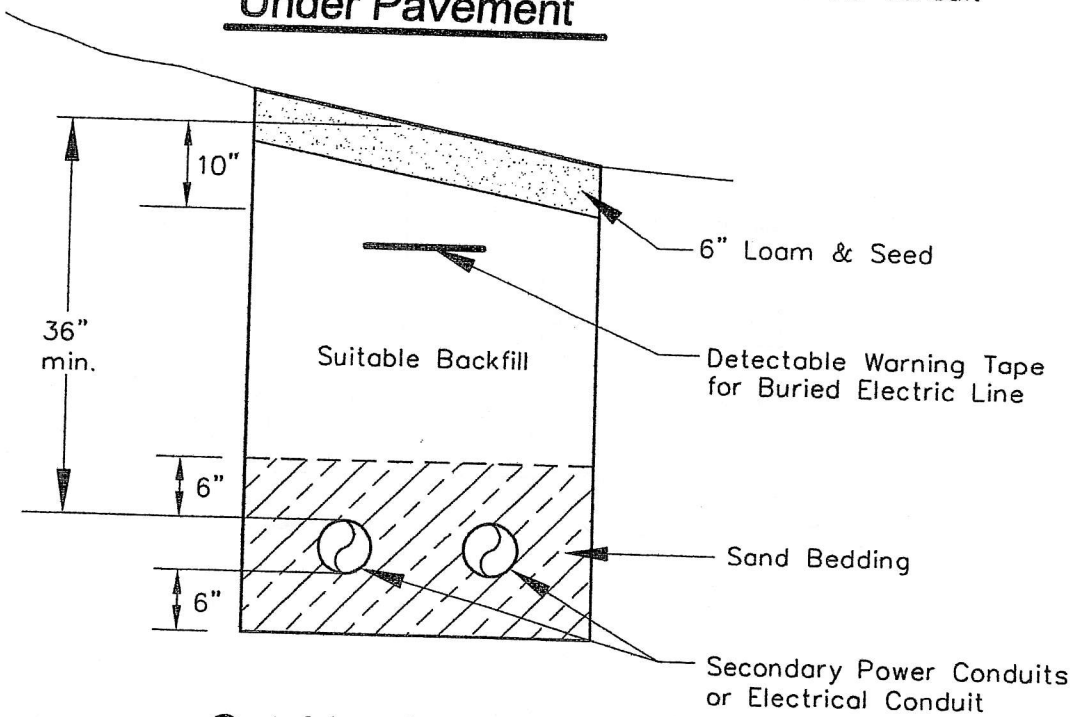
Figure 17:
Stone Lined Swale
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007 *Not to Scale*



Under Pavement



Outside of Pavement

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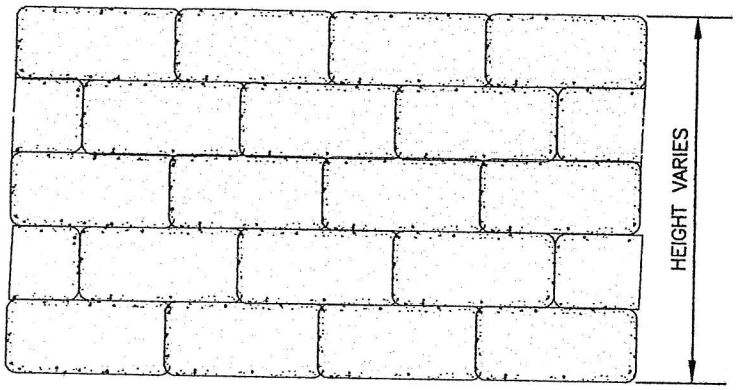
Figure 18:
Electrical Trench
Town of Alton, NH
Standard Details

FEBRUARY 5th 2007

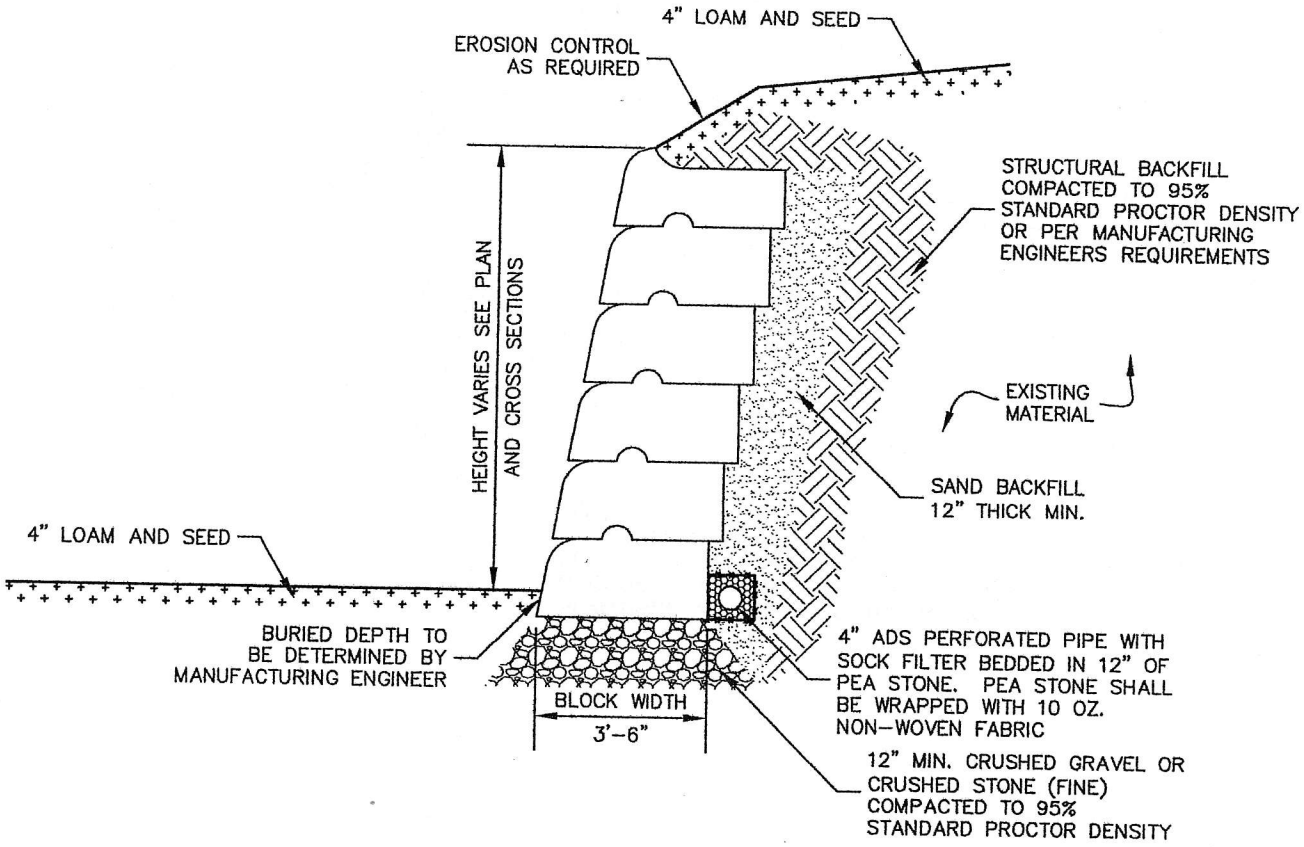
Not to Scale



Elevation View

NOTES:

1. RETAINING WALLS UP TO TWO FEET HIGH SHALL BE CONSTRUCTED OF MORTARED MASONRY RUBBLE AND CONSTRUCTED IN A SIMILIAR FASHION AS DETAIL 4: MASONRY RUBBLE HEADWALL.
2. RETAINING WALLS GREATER THAN TWO FEET HIGH SHALL BE CONSTRUCTED WITH REDI-ROCK STANDARD CONCRETE BLOCKS WITH A SPLIT LIMESTONE FACE OR ENGINEER'S APPROVED EQUIVALENT. APPLICANT TO PROVIDE DESIGN DRAWINGS AND CALCULATIONS FOR PROPOSED PRECAST RETAINING WALL STAMPED BY A NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER.
3. RETAINING WALL SHALL BE INSTALLED BY MANUFACTURER OR UNDER MANUFACTURER'S SUPERVISION AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
4. BACKFILL LIFTS SHALL BE A MAXIMUM OF 12" DEEP PRIOR TO COMPACTION.
5. THE RETAINING WALL SHALL BE CORED EVERY 300' TO ALLOW 4" PERFORATED DRAIN TO DISCHARGE.



Section View

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Figure 19: Retaining Wall

Town of Alton, NH Standard Details

FEBRUARY 5th 2007

Not to Scale